



DISEASE ASSOCIATED WITH LABORATORY HAZARD

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Lab Safety & Operating System (PHAR 315)

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Outline

- ✓ Laboratory Hazards
- ✓ Disease Associated with Laboratory Hazard



Objectives

- ❖ Demonstrate a proficient understanding of laboratory hazards and associated diseases.



Laboratory Hazards

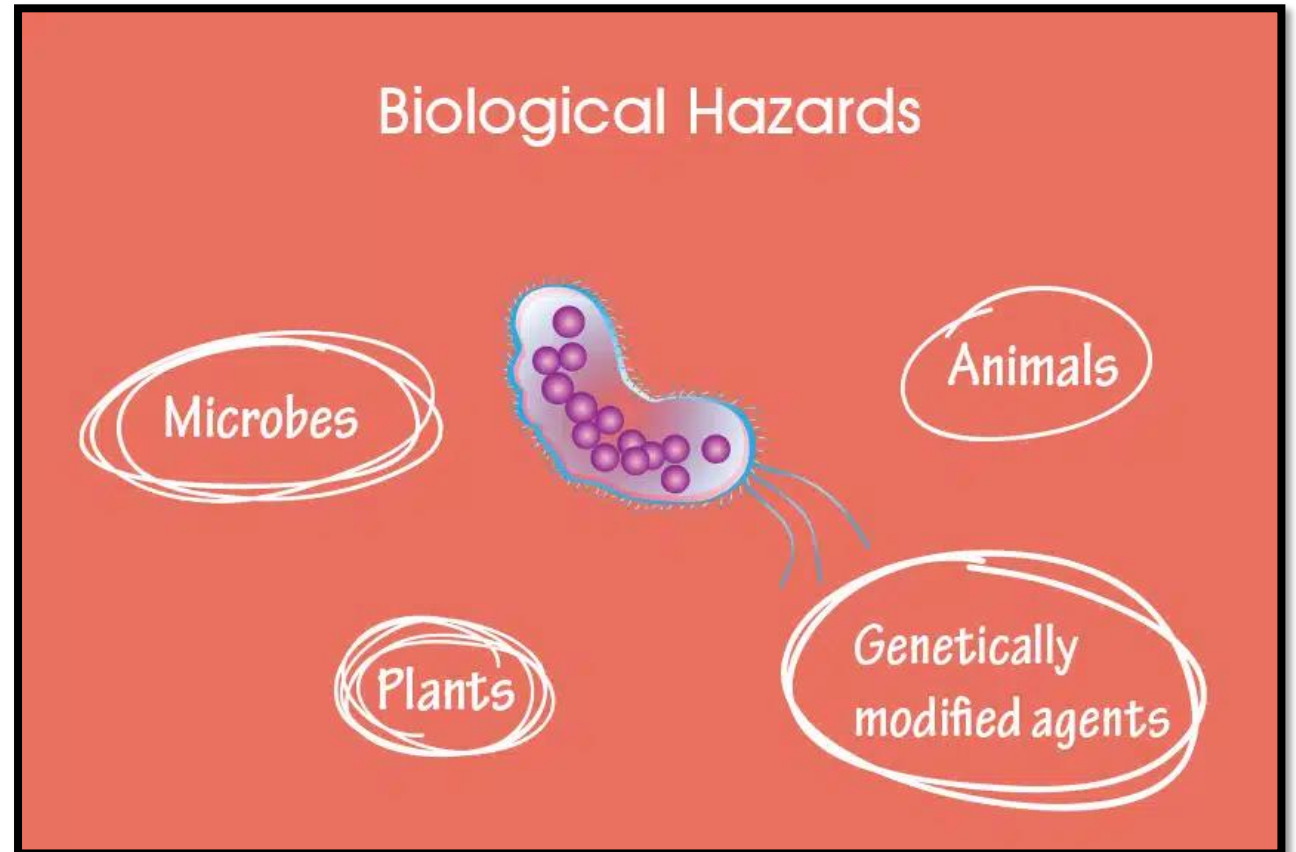
Most hazards encountered fall into three main categories:

- **Chemical**
- **Biological**
- **Physical**

Cleaning agents and disinfectants, drugs, anesthetic gases, solvents, paints, and compressed gases are examples of **chemical hazards**. Potential exposures to chemical hazards can occur both during use and poor storage.

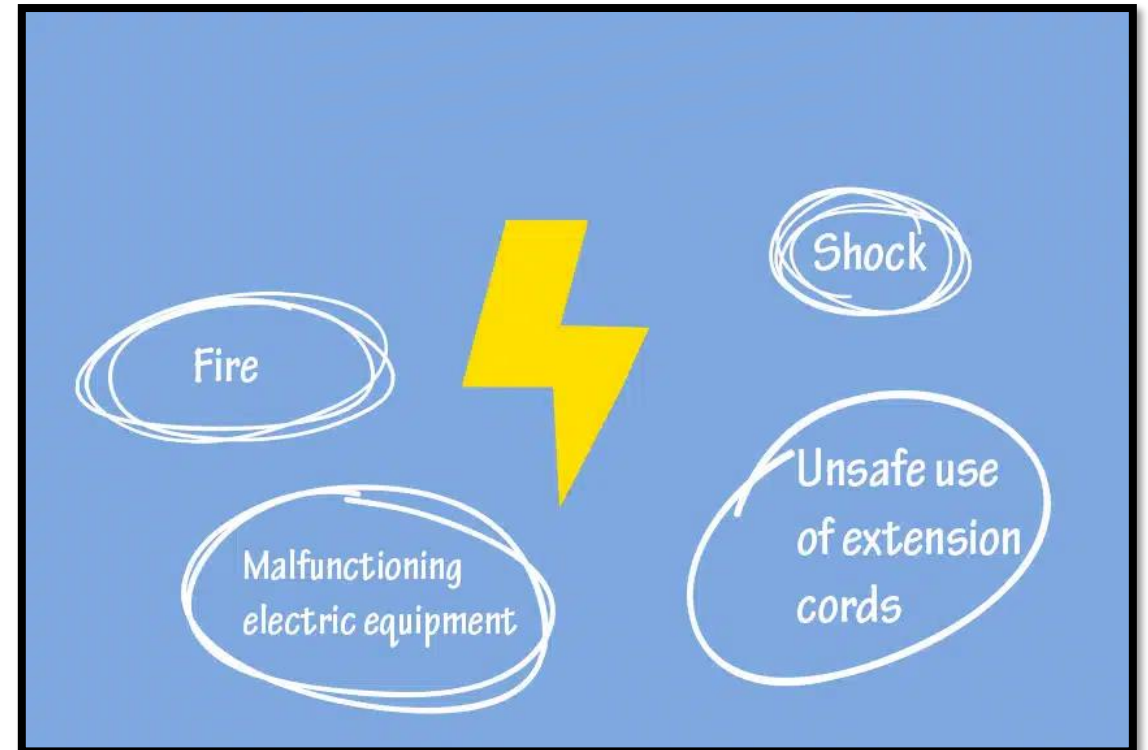
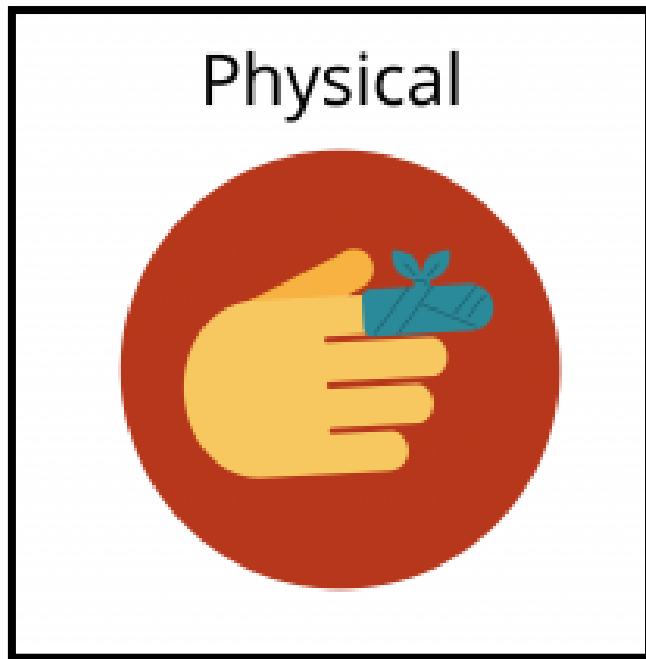


- **Biological hazards** include potential exposures to allergens, infectious zoonotic (animal diseases transmissible to humans), and experimental agents such as viral vectors. Allergens, are one of the most important health hazards.



The most obvious **physical hazards** are slips and falls from working in wet locations and the ergonomic hazards of lifting, pushing, pulling, and repetitive tasks. Other physical hazards often unnoticed are electrical, mechanical, acoustic, or thermal.

➤ Ignoring these can have potentially serious consequences.



Laboratory Hazard Labels



Biological Hazards



Chemical Hazards



Physical Hazards

Laboratory Hazards



- Key hazards in the laboratory are those risks presented by the dangerous properties of hazardous chemicals. When harmful chemicals aren't handled in a safe and compliant manner, they can cause **acute and chronic health problems**.
- These problems may include burns, eye injuries, lung disease, asphyxiation and suffocation.

Chemical Burns



- Many laboratory chemicals are classed as **corrosive substances**, which have the potential to break down or degrade common objects such as equipment, instruments and containers.
- Corrosive substances also pose a serious risk to your health. If a corrosive substance comes in contact with your skin, it will dissolve your flesh and cause severe damage to your body tissue. Even if you promptly wash the substance off your skin, corrosives can leave the skin irritated or with chemical burns. They can also cause issues with the eyes, damaging the cornea and potentially causing blindness.



Eye Injuries



- Chemical exposure can occur if liquids or gases are accidentally released, damaging the eyes.
- When hazardous chemicals come into contact with the eyes, it can result in minor or serious eye injuries. The extent of injury depends on the hazardous properties of the chemical and the level of exposure.

Example, a minor eye injury from chemical exposure could result in redness and irritation, while a more serious eye injury could cause permanent blindness.



Inhaling Dangerous Gases



- Many dangerous chemicals emit hazardous vapors and gases that are hazardous to human health.
- The health effects from exposure to hazardous vapors can be either **acute** or **chronic**.
 - **Acute** effects are those effects that are experienced immediately after contact with the vapors.
 - **Chronic** effects are those effects that are not experienced immediately, but months and years after initial exposure.

Health effects of chlorine gas inhalation can include symptoms such as:

- Irritation to mucous membranes in the nose, throat and respiratory tract.
- Headache
- Vomiting
- Coughing
- Burning
- Difficulty breathing





References

Sveinbjornsson, B. R., & Gizurarson, S. (2022). Handbook for Laboratory Safety. 1st. Elsevier.